



IDEM's Surface Water Quality Assessment Program

Synoptic Sampling Program

Program Objective

In 1996, the Surveys Section of the Indiana Department of Environmental Management, Office of Water Quality (OWQ), Assessment Branch initiated synoptic water quality sampling surveys in accordance with its new monitoring strategy. This strategy is described in the Office of Water Management document titled, *Monitoring Strategy 1996-2001*.¹

One of the main objectives of these surveys was to describe the environmental water quality of the surface water resource in these basins and to identify what parts of the watersheds are impacted and exhibit signs of existing or emerging problems. This was primarily accomplished by looking at water quality stream standards and by comparing sub-watersheds to each other.

The sampling site selection criteria are: land use, stream confluences and drainage areas. The samples are collected and analyzed to identify which parts of the watershed exhibit signs of existing or emerging problems. Sampling will be done during the whole range of stream conditions: high flow, low flow; before and after agricultural activities including pesticide applications; and seasonal variations.

Field analyses, visual observations, and laboratory analyses are used to provide indications of pollution and/or impacted water quality. Biological indices and habitat assessment are included to gain a picture of the overall health of the water resource in the watershed.

Program Participants

This program is operated by the Surveys Section of the Office of Water Quality at the Assessment Branch, with laboratory support from commercial contract laboratories or the Indiana State Department of Health Water Quality Laboratory, or a combination thereof. These support facilities may vary from year to year.

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The first two years of the monitoring strategy (1996 and 1997) utilized the Synoptic Sampling Program; however, in 1998 the monitoring strategy was revised. This revision, entitled the *Surface Water Quality Monitoring Strategy*, describes the various sampling programs in which data is collected and used. In 1997, a random (probabilistic) based approach was studied in conjunction with the synoptic program. It was determined that a random-based site selection approach in conjunction with an expanded Fixed Station Sampling Program could yield the same types of data in a more efficient manner. Therefore, the synoptic sampling program was discontinued after 1997 in favor of the random-based approach, which is now called the Watershed Monitoring Program.

Program Description

Media:	Surface Water: rivers, streams and lakes
Study Area:	Basin being studied, depending on year of the 5-year rotation
Site Selection Type:	Best professional judgement.
Sampling Sites:	Approximately 100 sites.
Sampling Frequency:	Six times per year B over all seasons and flow variations
Data Collected-	Field Data: Dissolved oxygen, water temperature, pH, turbidity, conductivity, and stream flow, weather code.
Laboratory Data:	Water Chemistry and Bacteriological.

Program Product(s)

- Fact sheet: *Watershed Monitoring Program*, IDEM 32/01/001/1998 (rev. 2001)
- Fact sheet: *Pesticide Monitoring Program*. IDEM 32/01/002/1998 (rev. 2001)
- Fact sheet: *Fixed Station Sampling Program*, IDEM 32/01/012/1998 (rev. 2001)
- Fact sheet: *Surveys Section*, IDEM 32/01/015/1998 (rev. 2001)
- Report: *1996 West Fork White River and Patoka River Basins General Aquatic Life and Recreational Use Water Quality Assessments for the 305(b) Report*, IDEM 32/02/014/1997(rev. 2001)
- Report: *West Fork White River and Patoka River Basin Eleven Digit Hydrologic Unit Mileages*, IDEM 32/02/015/1997
- Report: *West Fork White River B Patoka Watershed Atlas of Synoptic Sampling Sites for 1996*, IDEM 32/02/017/1997

Technical Notes

Sampling sites for this project were selected in such a way as to give an overall even spatial distribution coverage. Then, each site was evaluated as to its upstream land use. Sites were sampled six times over the year to give seasonal coverage. Basic water quality parameters were chosen to characterize the sites. Flow measurements were made at selected sites and data from the USGS gaging station sites were collected in order to help with the chemical data interpretation. Special sampling methods were followed which are referenced in this report. Samples were tested by contract laboratory. Results were entered in the Surveys Section database. Quality assurance and quality control guidelines were followed throughout the whole process.

Technical Notes B continued**Synoptic 1997 - Parameters and Laboratory Test Methods**

General Chemistry--Water	
Parameter	Test Method
Alkalinity	310.2
Total Solids	160.3
Suspended Solids	160.2
Dissolved Solids	160.1
Sulfate	375.2
Chloride	325.2
Hardness	130.1

Nutrient & Organic Water Chemistry	
Parameter	Test Method
Total Kjeldahl Nitrogen (TKN)	351.2
Nitrate + Nitrite	353.2
Total Phosphorus	365.2
TOC	415 or SM5310

Bacteriological	
Parameter	Test Method
<i>E. coli</i>	SM9222

Metals--Water Chemistry	
Parameter	Test Method
Arsenic	200.9
Cadmium	
Chromium	
Copper	
Lead	
Nickel	
Iron	200.7
Zinc	
Mercury	245.2

Field Parameters	
Parameter	Method
Dissolved Oxygen	HydroLab™ Multi-Probe sonde, and Scout 2™ Display Unit.
Temperature °C	
pH	
Conductivity	Calibration Checks by: Winkler field kit Hach Turbidimeter Cole-Parmer pH meter Mercury thermometer
Turbidity	
Weather Codes	Sensory
Stream Flow**	USGS gage or Wading

**Designated sites only

Contact Information

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